



August 2, 2006

## Program Response to Reviewers Recommendations

The Industrial Technologies Program (ITP) would like to thank the project teams and peer reviewers who participated in the 2006 Forest Products Peer Review. This document constitutes the Forest Products subprogram's response to the peer reviewer's recommendations.

### Portfolio Recommendations (p. 28 of the 2006 Peer Review Final Report)

**1) The Forest Products subprogram should clearly define technical risk in external communications.** The subprogram defines technical risk as the likelihood that a project will achieve its technical goals and milestones. For early stage projects (e.g. Stage 2 – Concept Definition), ITP will solicit high risk-high reward R&D projects that have significant public benefits (e.g. energy savings) and private benefits (e.g. industry profitability). For higher stage projects (e.g. Stage 4 – Pilot Scale Testing) where greater funding is involved, ITP will solicit projects where the technical risk has been minimized by successfully demonstrating the completion of gate criteria for Stages 2 and 3.

**2) ITP should consider restructuring its forest products strategic message to de-emphasize black liquor gasification and the forest products biorefinery.** The alternative goal of achieving energy self-sufficiency will require many of the same energy efficiency breakthroughs as the goal of enabling black liquor gasification and the forest products biorefinery. By linking our goals with the goals of black liquor gasification and the forest products biorefinery, ITP demonstrates that R&D in the area of steam reduction is crucial to achieving these long-range visions.

**3) The potential for ITP's current forest products portfolio to reduce steam demand by 15% by 2015 is low.** The current forest products portfolio was not developed under the steam reduction strategy. In addition, ITP has supported a significant number of smaller projects whose objectives were poorly linked to the Forest Products subprogram's goal of reducing energy consumption. The new steam savings strategy gives the Forest Products subprogram a clear focus and will be used to define the technical areas targeted in future solicitations. While breakthroughs will be required for this strategy to be successful, realizing the goal of reducing steam demand of a state-of-the-art pulp and paper mill by 15% in 2015 will greatly benefit the Forest Products industry by enabling gasification and the biorefinery through reduced feedstock requirements.

**4) The Forest Products Industry is reluctant to adopt new technologies due to the high cost of capital.** The Forest Products subprogram works closely with the Technology Delivery subprogram to insure that plants which receive energy savings assessments are aware of commercially available, energy efficient technologies that have been developed under the Forest Products subprogram. In addition, the subprogram will be piloting two or three energy savings assessments (ESAs) of papermachines at different mills. These papermachine ESAs will focus on helping mills reduce energy consumption without large capital investments.

**5) ITP should use an "other" focus area for projects that are not in priority focus areas.** In response to reviewer comments, ITP will solicit projects in its low energy curing resins pathway in a future solicitation. In

addition, the Forest Products subprogram will use its Stage 2 – Concept Definition Studies as an incubator for developing new focus areas.

**6) ITP should implement its strategy to fund research in stages but consider awarding early multi-stage projects that require detailed review to move on to the next stage.** In response to reviewer comments, the Forest Products subprogram has modified its strategy to award combined Stage 2/Stage 3 projects that require a detailed review to allow Stage 3 funding only if all Stage 2 requirements are met. However, the subprogram believes that Stage 4 projects should be awarded separately through the normal solicitation process.

**7) The Forest Products subprogram should impose strict requirements for accepting and awarding proposals.** The requirements for the next solicitation are being developed to fund projects by distinct stage. In addition, reviewer's comments from the last solicitation are being used to request better economic and technical information from the proposals in the next solicitation.

**8) ITP should consider life-cycle benefits when evaluating new proposals and should conduct literature searches to make sure that research is not a repeated or redundant effort previously attempted.** ITP relies heavily on project teams and merit reviewers to understand current state-of-the-art technologies and previous research efforts relevant to new proposals. Project teams are expected to provide background information on their proposals; failure to do so results in lower ratings from merit reviewers. ITP attempts to attract highly regarded reviewers with diverse backgrounds to increase the likelihood that winning proposals are novel and have significant energy savings potential.

**9) ITP should also consider providing deployment assistance for some of the successful, high impact projects that need help with commercialization.** ITP has begun to develop strategies to accelerate the implementation of energy efficient technologies, including deployment assistance for promising technologies. Last year, seven projects from ITP's portfolio participated in the Dawnbreaker Commercialization Assistance Program. The Forest Products subprogram has also started working with a consulting firm to help a project refine its market assessments and develop a focused business plan. The subprogram has also developed a brochure, *Forest Products Technologies: Public Private Partnerships Produce R&D Results*, to highlight commercial and emerging technologies and other ITP resources to help mills improve their energy efficiency. This brochure is distributed on ITP's website at <http://www.eere.energy.gov/industry/forest/>, at technical meetings, and during ESAs. As funding permits, ITP will continue these efforts to help accelerate the commercialization and adoption of energy efficient technologies and operation practices.

#### **Project Recommendations (p. 29 of the 2006 Peer Review Final Report)**

**Improved Wood Properties Through Genetic Manipulation.** Although this project does not fit the current portfolio strategy, it has made impressive progress and is achieving its technical milestones. ITP intends to fully fund this project with an FY07 increment of \$111K.

**Development of Renewable Microbial Polyesters for Cost Effective and Energy-Efficient Wood-Plastic Composites.** This project is relatively new and has not had a chance to collect enough technical information to determine if it can meet the criteria of its early go-no go decision points. The Forest Products subprogram will be monitoring this project closely and will continue funding only if it meets its technical milestones.

**Development of Screenable Wax Coatings and Water-Based Pressure Sensitive Adhesives.** This project does not fit well into the current portfolio strategy. However, the project has made impressive progress and the



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team has commercialized the results of their last project. ITP intends to fully fund this project with an FY07 increment of \$299K.

**Rapid, Low Temperature Electron, X-Ray, and Gamma-Beam Curable Resins *and* Novel Isocyanate Reactive Adhesives for Structural Wood-Based Composites.** These projects are in the low temperature curing resin focus area which the reviewers thought should be included in the new Forest Products strategy. ITP intends to complete funding for the Novel Isocyanate Reactive Adhesives for Structural Wood-Based Composites project with an \$87K funding increment in FY07. However, due to funding constraints, ITP can not provide additional funds for the Rapid, Low Temperature Electron, X-Ray, and Gamma-Beam Curable Resins project.

**Development and Full-Scale Demonstration of Multiport Dryer Technology; Lateral Corrugator: An Improved Method of Manufacturing Boxes; Development of Methane de-NO<sub>x</sub> Reburning Process for Wastewood, Sludge, and Biomass Fired Stoker Boilers; *and* Fibrous Fillers to Manufacture Ultra-High Ash/Performance Paper.** These projects are fully funded and have either been commercialized (Methane de-NO<sub>x</sub>) or are emerging technologies with a strong likelihood of being commercialized over the next few years. ITP has included these technologies in its brochure, *Forest Products Technologies: Public Private Partnerships Produce R&D Results*. This brochure is distributed on ITP's website at <http://www.eere.energy.gov/industry/forest/>, at technical meetings, and during ESAs.



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